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PUNCHED CARD SYSTEM NEEDN'T BE COMPLEX TO GIVE COMPLETE CONTROL.

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AT WORCESTER JUNIOR COLLEGE, MASSACHUSETTS, USE OF A MANUALLY OPERATED PUNCHED CARD SYSTEM HAS RESULTED IN (1) SIMPLIFIED REGISTRATION PROCEDURES, (2) QUICK ANALYSIS OF CONFLICTS AND PROBLEMS IN CLASS SCHEDULING, (3) READY ACCESS TO STATISTICAL INFORMATION, (4) DIRECTORY INFORMATION IN A WIDE RANGE OF CLASSIFICATIONS, (5) EASY VERIFICATION OF STUDENT RECORDS, (6) ELIMINATION OF EXCESSIVE PAPER WORK, AND (7) ACCURACY IN TUITION ACCOUNTING. USE OF MULTIPLE COPY FORMS DESIGNED FOR USE IN ALL STEPS OF A GIVEN RECORD PROCESS HAS ELIMINATED MUCH DUPLICATION OF EFFORT. ADVANTAGES OF THE SYSTEM ARE REDUCTION OF CLERICAL TIME FOR COLLECTING DATA AND TABULATING STATISTICS, READY ACCESS TO ALL RECORDED INFORMATION AT ANY STAGE OF PROCESSING, A HIGH DEGREE OF FLEXIBILITY NOT COMMON IN AUTOMATED SYSTEMS, AND REDUCTION OF ERRORS. THIS ARTICLE IS PUBLISHED IN "COLLEGE AND UNIVERSITY BUSINESS," VOLUME 37, NUMBER 2, AUGUST 1964. (WO)

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Punched Card System Needn't Be Complex

Without machines or specially trained employes, Worcester Junior College has simplified registration, streamlined accounting, and cut by 80 per cent the time required for processing data. It's all done with punch cards

Hazel T. Bemis
Registrar, Worcester Junior College, Worcester, Mass.

HOW often have college registrars and controllers sought a simple, yet highly accurate system of student record keeping which is flexible enough to handle a fast-growing enrollment, expanding curriculum, with the many program and tuition variables posed by individual students?

Without making a big project of automation and without the need for specially trained supervisors or machine operators, we believe we have solved this increasingly complex problem with a custom-tailored punched-card system that is low in cost, that produces data quickly, and that assures complete control at every phase of registration and accounting.

At Worcester Junior College, with an enrollment of 900 in the day division and with close to 1300 students in the evening division, we have to coordinate into a smooth-functioning over-all operation the administration of two separate businesses, which in a plant of any size would require tight scheduling and programing.

In addition, as enrollment has grown, so has the number of course changes by students, which has put a premium on the efficiency of our record-keeping system. Requests for statistical data from our administrative staff, and from outside agencies, have multiplied. The number of different financial arrangements for tuition payments seems to be legion.

Our punched-card system was first designed for us in 1954, then re-engineered to our requirements in 1960.

Each year, minor changes in procedures and in form design, which experience suggests, increase the benefits obtained. The unique feature of the system is that records of any size can be made mechanically articulate. We don't have to work with one set of original source-data, file-reference documents, and an extra set of punched cards simply to actuate machinery. In addition to eliminating all waste effort, our system provides these added benefits:

1. Simplified registration procedures enable us to complete 95 per cent of the day division registration in three days. For the convenience of students, registration in the evening division is spread over a 10 day period.

2. Quick analysis of conflicts in class scheduling can be made at any time during registration. Class "overloads," *i.e.* registration for courses in excess of classroom capacity can be automatically flagged, thus avoiding the necessity for later revision of student schedules.

3. Complete registration data, and other essential statistics, are available in the registrar's office on the day following registration. This enables the dean of the college to make immediate course and section changes, and additions where necessary.

4. Directory cards make it possible to tabulate enrollment data by a wide range of different classifications, without the need for multiple files and lists.

5. Class enrollment and individual student programs can be verified and cross-checked at any time with minimum effort.

6. The physical volume of individual subject grade reports, thanks to the code-punching along the edges, presents no problem in the correlation of data for posting to student permanent records.

7. Multicopy course change records incorporate the grade reports, thereby eliminating extra paper work.

8. Student tuition accounting is coordinated with the entire system to provide assurance that financial records are in balance with registration statistics.

The flexibility and capacity of the system has proved itself at Worcester Junior College by the ease with which we have been able to handle an enrollment of 2200 students, double the enrollment of five years ago. Despite this growth, errors in scheduling and programing have been minimized.

Other problems arising in special situations have been reduced, despite the fact that in the day division

To Give Complete Control

each student averages from five to seven classes per semester.

Record control under the system begins in the fall of each year when new and returning day division students register over a three-day period.

Returning students are processed on the first day, new students on the following day, and late registrants on the third day. To minimize our clerical work load, we have the students enter as much data as possible on the various records supplied to them at registration. While we hire (from an agency) several clerks for the three days, their primary function is to check the accuracy and completeness of basic data on records filled out by the students, and to complete the posting of tuition charges and payments. This frees the time of our permanent staff for supervision, trouble shooting, and for tabulating statistics by punched-card equipment and technics already familiar to them.

Each student, upon entering the registration area, is given a marginally-punched directory card, which serves as a permanent historical-biographical record of his vital statistics.

New students make out new cards, while returning students simply make changes on the cards already on file.

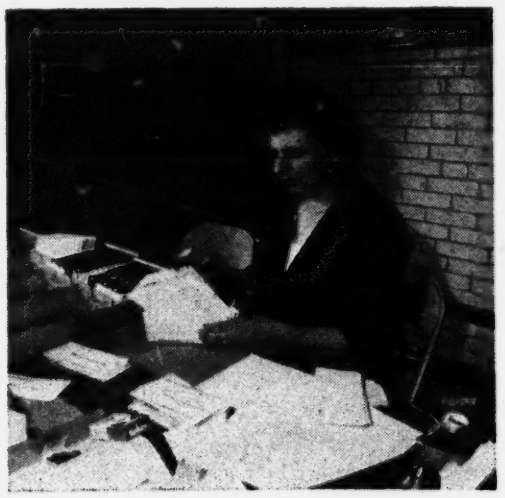
The student also receives a two-part registration "visual file" card which, when completed, serves as a master schedule of the student's complete program, indicating when and where he will be attending classes each day. Original copies are filed alphabetically in "swing hinge" binders in the registrar's office. Duplicate copies go to the respective deans of the day and evening divisions.

After receiving these cards, the student proceeds to a course selection area, where he is given a three-part class card for each course, based on a master schedule approved by a faculty adviser a week prior to registration. Prior to registration, these class cards have been machine printed with course number, course name, and section, then grooved at the bottom edge with coding for these same values. The number of class cards available, at the course selection area, corresponds to the seating capacity in the classrooms to which courses (and sections) have been assigned. Once the number of cards available for each course is exhausted, adjustments can be made either through adding an additional section or by rescheduling (when necessary) students from one section to another.

The student enters such facts as name, address, day or evening division, degree status, date, curriculum and name of instructor on each class card.

The top copy is detached and re-

Above: Teacher helps student select class cards for courses previously assigned after counseling. Prepunched cards in each rack correspond to enrollment capacity in each course and section. **Below:** Directory cards, class cards, and tuition cards are punched and sorted at end of line.



turned to the student to admit him to the class. It then serves as a temporary class list for the course instructor until he can, at any time in the next 30 days, check his list with the registrar. The second and third copies serve as a grade report. Right after registration, they are sorted and filed alphabetically by student, by class, and section. At the end of each marking period, they are transmitted to instructors for entering grade, and for return to the registrar.

At this point, all grade reports are sorted alphabetically by student for posting grades and semester hours credits to the students' permanent records. One of the two remaining copies, with confidential coded data entered by the instructor, is forwarded to the dean of students. The last copy is mailed in a window envelope to the student's home address.

Special tuition cards are also filled in by the students at registration. The top part of the card is used by the student to enter statistical data and courses selected. The controller completes the upper left-hand section, listing charges and payments to be made. The lower right-hand section is used for recording, both at registration and during the semester, all charges and credits to the student's account.

Punching at top and bottom of the tuition cards provides for rapid accumulation of statistical data in the bookkeeper's office, and furnishes an automatic follow-up on installment payments as they come due.

The holes at the left of these cards are for "pegging" them on a general records poster when entering charges and payments. In this operation, six different forms are posted simultaneously: (1) tuition card, (2) cash received journal showing charges broken down by type and by curriculum, (3 and 4) duplicate payment receipt, (5 and 6) duplicate bank deposit slip. The latter is a unique double-fold tear-off section of the cash received journal. This "one-writing" system, using portable "posters" that are simple to operate and free from mechanical breakdown, eliminates countless hours of transcription of figures from one record to another, with the bonus of greater accuracy and faster proof.

After payments are made and posted at registration, each student moves to a check-out line of some half-dozen clerks seated behind a long table. Here class cards and "visual file" cards are checked against a master schedule, which is issued in duplicate with the student receiving the copy.

If a student's cards check out correctly, the top copy of each class card is returned to him as an admission slip to each course. A clerk then keypunches each class card with an alphabetical student name code, before sorting and filing these cards by class and section. It is important to note that this is done *during* registration. At the end of each day, a form is made up showing total registration for each course and section, so that by the following morning this information can be in the hands of the dean for possible adjustments to the master schedule. Later, permanent record cards for each student are made up in the registrar's office from information taken from the "visual file" cards.

Course changes during a semester are first noted on a six-part course change record.

This is originated by a student in the registrar's office at the time of a change, and after approval.

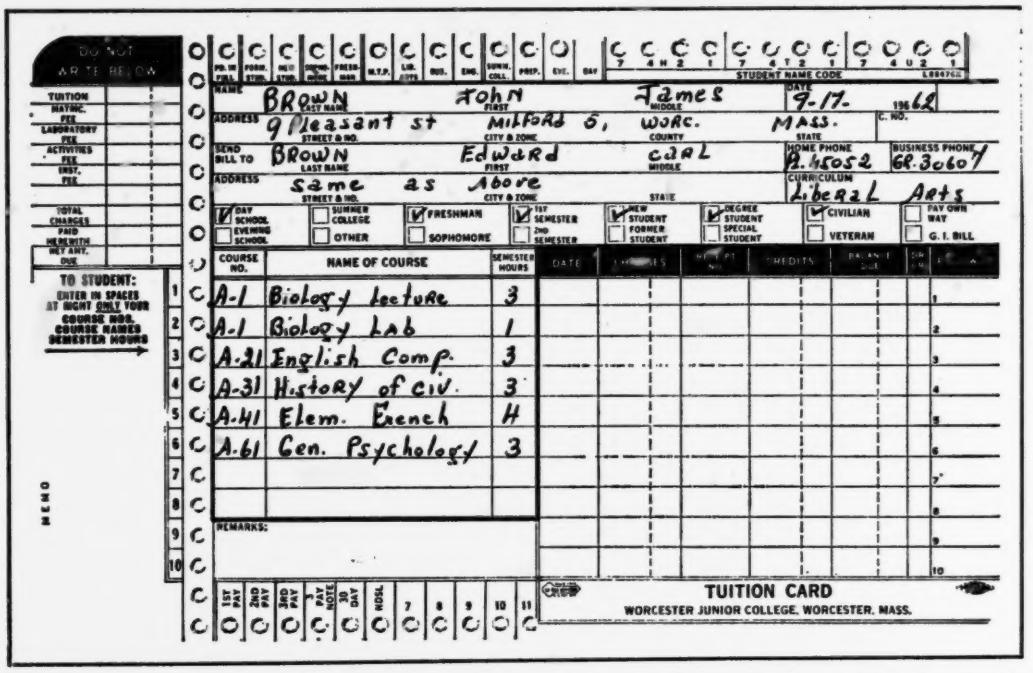
The form provides (1) a triplicate notice of course change — for registrar, bookkeeper and previous instructor; (2) an admission slip for a new course, and (3) a duplicate class card-grade report. We have found that this all-inclusive design eliminates the need for making out several different forms.

As a final step in a course change, the original class card-grade report is stamped "withdrawn" and the change recorded on class lists, "visual file" cards, and on the permanent records.

One additional, but important, form is the mid-term low grade report, one copy of which is sent to students as a warning of below-passing achievement. Other copies go to the academic dean and department head. Preparation of these reports, followed by timely counseling at least 30 days prior to semester exams, helps forestall failures in a course and reduces the incidence of dropouts.

As a means to accurate and flexible data processing, we have found that the system we use has reduced by 80 per cent the time required for collating data and tabulating statistics.

During all the operations of card punching, sorting and report preparation, we have ready access to all recorded information. By not getting too automated, we have retained a high degree of flexibility that allows us, for example, to quickly adjust individual schedule problems. Finally, we have sharply reduced the incidence of errors by an efficient and economical system that provides far better control over that unpredictable factor known as "the student." ■



Tuition card lists academic data for bursar's records, together with all data regarding charges and credits to student's account. Top part of card and list of courses are filled in by student at time of registration; upper left section is completed by bursar during registration.

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LETTERS TO THE EDITOR

Business Officers Need General Background — Plus

Atlanta, Ga.

Editor:

I must compliment you as usual on the very high standards which are being maintained with COLLEGE AND UNIVERSITY BUSINESS.

I was quite interested in reading the article in the May issue by Algo D. Henderson, "How To Educate Business Managers for Their Role as Decision-Makers," which is in effect a discussion of the problem and a description of the curriculum at the Center for Study of Higher Education at Ann Arbor, Mich.

On page 59, the article states: "We have placed this effort at the doctoral level for the very reason that we are aiming to prepare persons for these highest positions. We believe that the accountants, purchasing agents, insurance officers, and so forth can continue to be trained satisfactorily in schools of business administration.

In the first place, it seems to me that all officers in a college or university dealing with business problems should be general business officers even though they may be specialized in one or more fields of endeavor. Most of the chief business officers in our institutions either came from similar positions in smaller schools or more likely were promoted from some specialized position within the institution. The men who really perform best in these specialized activities also are those whose interests are such that they try to take a broad view of all business management problems, recognizing that teamwork is often essential among the specializations to handle a general or repetitive problem. They also try to fill the gaps of their knowledge with as much training as [illegible] fields and [illegible] er [illegible] ol [illegible] at [illegible] p a si- tion needs to know in a complicated university. Certainly some legal train- fields, and particularly in procurement, as much training as is possible in the physical and biological sciences is extremely important since so much of the work of a procurement department deals with the scientific departments that are furnishing instruction and working with research problems in the sciences.

Of course, accounting training is important in any of the areas of business management. Marketing knowledge is also extremely important for the procurement officer.

My own feeling is that it is easier to employ a man well-versed in the sciences or engineering and train him in university business operations than it is to take a person who is a graduate of a business school with little or no academic training in the sciences and try to make him a purchasing agent in the areas involving scientific apparatus equipment, chemicals and supplies.

My own premise then would be that, for procurement at least, scientific training in the physical and biological sciences is of even more importance than is training that would be received in a school of business administration. The second premise would be that whatever a man's specialization might be in a college, he will be a more dynamic, useful member of the team if he has a broad view of business management and higher education, and certainly he would be more likely to function well in the top position if he is not too narrowly specialized in his interests.

There is so much really that a person needs to know to function on any level of business management that it is extremely difficult to design an academic curriculum even on the graduate level that will enable him to function for the best interest of his institution. A great deal of practical knowledge is to [illegible] with people, both within and without the institution, as to products, commodities and trade practices, and as to business and legal policies and procedures certainly is necessary.

Fortunately, most of the men who

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